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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,625	07/10/2006	Shinji Hirai	053064	5426
38834 7590 03/31/2009 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036				
EXAMINER MIYOSHI, JESSE Y				
ART UNIT 2811		PAPER NUMBER		
MAIL DATE 03/31/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/550,625

**Applicant(s)**

HIRAI ET AL.

**Examiner**

JESSE Y. MIYOSHI

**Art Unit**

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-4 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 26 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date 9/26/2005

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_  
5) ☐ Notice of Inventor's Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 2 recites the limitation "the rare earth comprises" in line 2. There is insufficient antecedent basis for this limitation in the claim. Said limitation should be "the rare earth metal comprises".

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Uemura et al. (WO0187799 published Nov. 22, 2001; hereinafter "Uemura") as evidenced by U.S. 7,186,391.

**Re claim 1:** Uemura teaches a dielectric material comprising a sintered body of rare-earth sulfide powder (pressure sintering the raw material, e.g.  $\text{La}_2\text{S}_3$ , to provide a sintered compact having crystal structure of beta phases; e/g/ column 4, lines 8-28), the

rare-earth sulfide powder having a crystal structure of tetragonal  $\beta$  type, a chemical composition represented by  $\text{Ln}_2\text{S}_3$  (where Ln represents a rare-earth metal), a frequency domain within the range of 0.5 kHz to 1,000 kHz, and a value of relative dielectric constant of more than 1,000 at room temperature.

Regarding the claimed properties of the composition which states "a frequency domain within the range of 0.5 kHz to 1,000 kHz, and a value of relative dielectric constant of more than 1,000 at room temperature", Examiner would like to cite MPEP 2112.01(ii) which states if the composition is physically the same, it must have the same properties.

**Re claim 2:** Uemura teaches the dielectric material, wherein the rare earth comprises at least one of lanthanum (La), praseodymium (Pr), cerium (Ce), and neodymium (Nd) (powder of  $\text{La}_2\text{S}_3$  or  $\text{Ce}_2\text{S}_3$ ; e.g. column 4, lines 8-9).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura as applied to claim 1 above, and further in view of Asgari (U.S. PGPub 2006/0211802).

**Re claim 3:** Uemura is silent as to the dielectric material, characterized in that wherein platinum is added to the rare-earth sulfide powder to prevent a crystal structure of  $\beta$  type sesquisulfide from being inverted to  $\gamma$  type at a high temperature.

Asgari teaches sulfides of rare earth metals (e.g. paragraph 23) and said sulfides having additives such as metal powder such as platinum powder in order to adjust or alter the mechanical, optical and/or thermal properties of the sintered metal containing material (e.g. paragraphs 63 and 64).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the platinum powder as taught by Asgari in the rare-earth metal containing sulfide of Uemura in order to alter the mechanical, optical and/or thermal properties of the sintered metal containing material (see paragraphs 63 and 64 of Asgari).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura as applied to claim 1 above, and further in view of Maria et al. (U.S. 6,753,567; hereinafter "Maria").

**Re claim 4:** Uemura is silent as to the dielectric material, wherein the dielectric material is included in a capacitor.

Maria teaches rare earth compounds based on oxides sulfides, silicides, etc. as well as integrated circuit capacitors including lanthanum oxide-based capacitor dielectrics.

The prior art elements teach all of the claimed elements. The difference between the prior art and the claimed invention is using lanthanum sulfide based dielectric material rather than lanthanum oxide based dielectric material as the dielectric material of capacitors.

One of ordinary skill in the art would have recognized that lanthanum oxide and lanthanum sulfide are known equivalents for a high-k dielectric material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute one known element (lanthanum sulfide) for another known equivalent element (lanthanum oxide) resulting in the predictable result of forming a capacitor having a dielectric with a high dielectric constant.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The article by Prashant Kumta and Subhash Risbud discloses the properties of beta and gamma lanthanum sulfide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSE Y. MIYOSHI whose telephone number is (571)270-1629. The examiner can normally be reached on M-F 7:30AM-5:00PM EST. Alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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